could I have only reached the neighbourhood of Músul, a visit to that town and the adjacent ruins of the Assyrian cities of Nineveh, Khorsábád, and Nimrud, as well as a minute examination of the interesting Al Hadhr, so graphically described by my friend Dr. Ross; and I feel the disappointment the more, as I have already been six years in this country without ever having had such an opportunity, my duties not permitting me to absent myself from the vessel for a length of time such as would be required to perform the journey by land from Baghdád.

The failure of this attempt is not to be attributed to any severe obstacles met with in the navigation of the Upper Tigris; for to a vessel possessing the power of those now running on the Thames, of an average speed of 10 knots per hour, such difficulties as the Nitocris experienced would be deemed of minor importance. The Nitocris, indeed, under the most favourable circumstances in still water, cannot exceed the speed of 8 knots per hour, having a wheel of 12 feet diameter only, and a short stroke of 30 inches. It can hardly, therefore, be deemed a matter of surprise that she should have failed to contend against a stream of 6½ geographical miles per hour, with occasional falls, when it is considered that she carried above one month's provisions and 18 tons of fuel, besides the guns, matériel, and men, on the present expedition.

When I left Baghdád I hoped for, but did not anticipate success. I am therefore not disappointed. We have at all events to congratulate ourselves on having ascended to the Hamrín, whereas our former journey, having the same objects in view, terminated at Dúr from an insufficiency of water.

The bearings throughout these notes are true, excepting where expressly mentioned by compass.

Bombay, 26th July, 1846.

II.—*On the best Means of reaching the Pole.*—By Admiral F. Wrangel.

[Read April 12th, 1847.]

The vast accumulation of ice—which covers the northern seas in immense fields, high hills, and small islands—subjects the navigator in these waters to incessant danger and anxiety: to struggle with the elements, to overcome obstacles, to be familiarized with dangers—all this is so habitual to the seaman, that he is sometimes even dull without it. The continual, uniform, and quiet navigation in the regions of the trade-winds excites in the sailor a desire for change: he encounters a squall with joy, welcomes even a storm in the seas beyond the tropics not without a certain

pleasure; and, confident in his skill, in the activity and indefatigable energy and experience of his crew, in the strength of his vessel and soundness of all her parts, he does not fear the terrible powers which so often put to the trial all his patience and all his coolness. Such being the ordinary feeling of the seamen, it is not astonishing that the Frozen Ocean has long attracted the navigators of all nations, but in particular those of England—that country which has an indisputable right to be regarded as the first of all maritime nations. Without taking into consideration the great number of whalers, who have carried on their trade among the mountains of ice in the most remote latitudes of the Atlantic, England has sent out fifty-eight distinct expeditions to discover a shorter passage to the Pacific, either by the N.W. or N.E. channel, from the time of John Cabot (1497) to George Back (1836): not one of these has been crowned with complete success.

In all those enterprises, however, one common aim, not specified in the instructions, has ever been kept in view; and this aim has been more or less attained by every successive attempt—the maintenance of the spirit of enterprise and the support of a laudable national pride, in the attainment of the laurels of disinterested exploits, for the advantage of science, trade, and navigation—the true sources of power and glory to every maritime people.

When, after nearly three centuries and a half, scientific men, and even navigators, were persuaded of the improbability of the existence of a N.W. or N.E. passage to the Pacific, practicable for trade, the evident aim for new enterprises was transferred to the invisible point of the earth—the North Pole. The expedition of Captain Buchan, and the fourth voyage of the indefatigable Parry, were undertaken expressly with that view.

This question, supported by the celebrated Barrow, has been again moved in England, and has resulted in the exchange of opinions on this subject between navigators and scientific men.

Captain Sir William Edward Parry, in a letter, dated the 25th of November, 1845, to Sir John Barrow, proposes in a short outline a new plan for the expedition. Following the principles there traced, a party would not, he thinks, meet with any of the difficulties encountered by Parry himself in the latitude of 82° 45′ N., or about 2° to the N. of the extreme point of Spitzbergen, which was the starting-point of the Polar Expedition. Having unequivocally assigned as the chief causes of failure in those attempts—to which, however, no others can be compared with respect to the difficulties overcome—1st, the broken, uneven, and spongy state of the ice, covered with snow; and, 2ndly, the drift of the whole mass of ice in a southerly direction—Captain Parry proposes, in order to avoid these unfavourable circumstances, that the ship employed in the projected expedition should winter

at the northern point of Spitzbergen, and the party particularly designed for the attainment of the Pole should leave the vessel in April. About 100 miles north of this point there should be previously prepared a store of provisions, so that the party, at the commencement of its journey, should not be too heavily laden; and about the time of its return, according to the reckoning of Parry, in the course of May, there should be sent out another detachment with provisions to meet it about 100 miles further from the place where the ship is wintered. Captain Parry founds his hopes of success on the supposition that, in April and May, the party would proceed about thirty miles a-day along the ice, which would then offer an immovable, solid, and unbroken surface. He also thinks it advisable to provide the expedition with reindeer.

Finding it difficult to make these ideas of Captain Parry accord with those which I entertain respecting the state of the ice and the circumstances indispensable to success in travelling along its surface, I beg leave to express my doubts, and submit my ideas on this subject.

Expeditions were undertaken in the years 1821, 1822, and 1823, in the Siberian Frozen Sea, from two points of departure, distant one from the other, in the direction of the parallel, more than 1000 miles, viz. from the mouths of the rivers Lena and Kolyma. These expeditions occupied an interval from about the end of February to the beginning of May (O. S.), and the state of the ice does not at all seem to have been such as Captain Parry supposes it to be, to the north of Spitzbergen, in the course of April and May (N. S.).

Lieutenant (now Rear-Admiral) Anjou was stopped by thin and broken ice moving in different directions, in

1821. April 5 (O.S.)	at the distance of 20 Italian miles from the nearest shore .	.	N. of the island Kotelnoy.
1822. March 22.	22 Italian miles .	.	
„ April 14.	60 „ .	.	E. of New Siberia.
1823. Feb. 28.	59 „ .	.	N. of the islands at the mouths of the Lena.

The expedition commanded by the author, which took its departure from the mouth of the Kolyma, encountered the same impediments:—

In 1821. April 3,	at 120 Italian miles .	.	N. of the nearest shore.
„ 1822. „ 12,	at 160 „ .	.	
„ 1823. March 23,	at 90 „ .	.	

But on the 27th of March the masses of ice, which were separated from each other by large channels of open water, were driven about by the wind and threatened the voyagers with destruction.

My hypothesis is founded on the above facts, collected during a three years' navigation in a sea whose depth is not more than 22 fathoms, and which is, so to say, landlocked to the S. by the Siberian coast, and there defended from the winds and waves over a space of 180° of the compass; whereas the sea on the meridian of Spitzbergen has a considerable depth, and is exposed to the swell of the whole Atlantic. Therefore I cannot concur in Captain Parry's hopes that the ice can be in a state favourable to the execution of a journey towards the N. in April and May.

Captain Parry's calculations as to the possibility of advancing thirty miles a-day seem to imply the employment of reindeer, and would render it necessary to provide the expedition with those animals: we must, therefore, conclude that that officer expects to obtain the necessary rapidity by the assistance of rein-deer. If I am warranted in this supposition, I must remark that rein-deer are far from being capable of advancing over the uneven surface of the ice, and are besides too weak to carry heavy burdens.

Sir John Barrow, in his work 'Voyages of Discovery and Research within the Arctic Regions,' &c., publishes the above-mentioned letter of Captain Parry, disapproving, however, his proposed plan, and anticipates greater success in the enterprise by accomplishing it in small sailing-vessels, fitted with the Archimedian screw (like the ships 'Erebus' and 'Terror'), and steering northward on the meridian of Spitzbergen: in other words—Barrow proposes the repetition of the former attempts, notwithstanding their failure, expecting success from more favourable circumstances. But here a question is naturally suggested—may there not exist means of reaching the Pole other than those which have been hitherto resorted to—means not liable to the various inconveniences already encountered during the several expeditions undertaken from the coasts of Siberia towards the N. upon the surface of the ice, and which must be encountered in proceeding on foot, as Captain Parry proposes?

The last Siberian expeditions were executed in a particular kind of sledges, called "Narty," drawn by dogs. The expedition, undertaken from the mouth of the Kolyma, travelled in this manner in 1823 (from the 26th February to the 10th May) 1533 miles, of which the greater part was along the shore towards the island of Kolutchin, seen by Captain Cook during his navigation in a N.W. direction from Behring's Straits. We proceeded upon the ice along the shore very successfully, but as soon as we left it the difficulties and impediments increased. If the coast of Siberia had a direction parallel to the meridian, the Kolyma expedition would have travelled 11° of latitude in one direction and the same in returning; therefore, if the point of departure had been the 79° of N. latitude, the expedition might have reached the Pole and returned to its starting-point.

The utmost limits of the coast of Greenland towards the N. remain yet unknown; but the meridian direction of its mountains and coasts allows us to suppose that, in proceeding along them, it is possible to approach the Pole nearer than from any other direction, or even to reach that point.

The northernmost point of Greenland, Smith's Sound, seen by Captain Ross, is in latitude 77° 55′ N.; and in latitude 76° 29′, and on the island Wolstenholme, there is a village of Esquimaux. Taking all this into consideration, my opinion may be expressed in the following plan:—The ship of the expedition should winter near the Esquimaux village, under the 77th parallel, on the western coast of Greenland. There should be previously despatched to this point, in a separate party, at least ten narty, with dogs, and active and courageous drivers; the latter the same, if possible, as were employed in the Siberian expeditions,* likewise stores and provisions in sufficient quantity. In autumn, as soon as the water freezes, the expedition should go to Smith's Sound, and from thence further towards the N. On arriving at 79°, it should seek on the coasts of Greenland, or in the valleys between the mountains, for a convenient place to deposit a part of the provisions.

In February the expedition might advance towards that place; and in the beginning of March another station, two degrees further N., might be established. From this last point the Polar detachment of the expedition would proceed during March over the ice, without leaving the coasts, keeping along the valleys, or on the ridge of mountains, as may be found most expedient, but deviating as little as possible from the line of the meridian, and shortening the distance by crossing the straits and bays. A part of the men, dogs, and provisions, should await their return at the last station.

The expedition, to reach the Pole and to return, must traverse in a direct line nearly 1200 miles, or, including all deviations, perhaps not above 1530 miles, which is very practicable, with well-constructed sledges, good dogs, and proper conductors.

If the most northern limits of Greenland, or the Archipelago of Greenland Islands, should be found at too great a distance from the Pole, and the attainment of that point seem impossible, the expedition might at any rate draw up the description of a country hitherto absolutely unexplored, and would, even by so doing, render an important service to geography in general.

* The success of such an enterprise would chiefly depend on the kind of dogs, the experience and courage of the conductors, and the form of the sledges. It certainly will not advance rapidly if Esquimaux or Tchouktschi dogs are employed, because these are entirely unaccustomed to such long journeys; nor with Esquimaux or Tchouktschi drivers,—men without courage or activity.